The National Elementary Principal

Volume XXIX, No. 4 **February, 1950**

(Twenty-ninth Year of Publication)

We Present

Page

Science in the Elementary School

Editorial: An Essential Part of the Curriculum—*Eva G. Pinkston* 2

Science Experiences in Today's Elementary School—*Rose Lammel* 3

The Teachers Speak to Their Principals—*Louisa Pike* 9

Principals Help the Teachers—*Helen A. Bertermann* 12

Some On-Going Science Programs:

I. In a Suburban Community—We Use Our Own Resources—*Margaret C. McCormack* 15

II. In County Units—The Workshop Way—*Dorothea M. Wein* and *Myrtle M. Townsend* 20

III. In a City System—Science in the Elementary School—*Bonnie C. Howard* 24

The Principal Helps Teachers to Utilize Community Resources—*Doris D. Klaussen* 28

Science and the Total School Program—*Leversia G. Powers* .. 31

A State Principals' Association Implements the Science Program—*Bernard W. Kinsella* 35

Obtaining the Materials for Science Teaching—*Marjorie H. Campbell* and *Gertrude D. Howard* 39

Selected Bibliography—Compiled by *Beatrice Davis* 42

Atlantic City Convention 46

South Central Regional Conference 48

The articles herein printed are the expressions of the writers and not necessarily those of the Department.

An Essential Part of the Curriculum

EDITOR'S NOTE: We are all aware of the increasing importance of science in our lives. Its discoveries affect us all. The method employed in scientific investigations is applicable in solving many of our everyday problems. The scientific attitude is essential equipment for intelligent living, and a greater appreciation of the wonders of science makes for richer living.

The interests and needs of children in our elementary school make science experiences an essential part of the curriculum. Every year we take new steps toward meeting these needs and interests. More schools include science as a definite part of the curriculum, teachers become more aware of the importance of science, new materials are published for teachers and pupils, and school administrators are making resources available for a more effective science program in the elementary school.

In spite of this progress, the science programs in many of our elementary schools are still far from good. Many teachers feel unprepared to teach science. They need assistance in finding out what to teach and how to teach it. Most of them need just a little more confidence in their ability to teach science—confidence that comes with opportunity to learn. Providing this opportunity to learn is one of the problems of the elementary school principal. Without the interest and help of the principal the science program cannot succeed. The problem of science teaching is not unusual in this respect, but with a relatively new subject in the curriculum it is more than ever important that the principal take active leadership in developing the program.

The best programs in elementary science in the country are those in which teachers themselves feel the need for help and are given opportunity to identify their problems, and cooperatively with their principals and other administrative individuals to work out plans for solving them.

In this issue of the NATIONAL ELEMENTARY PRINCIPAL we are describing some of these problems and indicating how they have been handled. We have attempted to show how various kinds of plans have been evolved, and how principals and others have cooperated to use local resources. Some of the articles show how science becomes part of the total school program, for the authors believe that science experiences are an essential part of the total school program and must, therefore, be considered in the light of contribution made to total development of girls and boys. It is hoped that reading these articles may assist in developing an increased interest in science at the elementary level and improve the effectiveness of the present programs.

Plans for this bulletin were made and carried out by Glenn O. Blough and Paul E. Blackwood, Specialists for Elementary Science, U. S. Office of Education.

—EVA G. PINKSTON

Science Experiences in Today's Elementary School

ROSE LAMMEL

Associate Professor of Science Education and Elementary Education, School of Education, New York University, New York, New York

TODAY'S elementary schools are making increasingly wider and wiser use of experiences with science as an integral part of the *total* program of living and learning for the boys and girls. An elementary school program designed to help each child grow and mature at his own rate, to help each meet his basic physical, emotional, social needs and fundamental interests, to develop skills in the democratic processes, and to grow in interest and ability to work for the good of the group will make continuous use of experiences with science. Recognizing and stating problems of real concern and interest, planning, experimenting, observing, sharing, taking field trips, searching for information, evaluating information, generalizing from evidence become characteristic learning experiences throughout the school.

Children do not wait until they enter the doors of the school to seek out science experiences. In their earliest years in living and learning in their homes and communities, they come upon many uses of science and upon many illustrations of the method of science as a way of working. As the young child develops and matures he is constantly reaching out to understand his world. Linton [1] has pointed out that experimental tendencies are characteristic of all young children. The child's earliest movements, manipulations and observations result in discovering differences in texture, in taste, in temperature, and in becoming aware of animals, rocks, rain, snow, sun, toys. Such discoveries are a part of the young child's developing sense of "at-homeness" in the world. As the child's skill with language increases, his reaching out to understand broadens and deepens. "Where does the sun go when it goes down?" "How does a cow make milk?" "What makes a seed grow?" We see young children playing with blocks, boards, wheels, wagons, toy trucks, trains, tractors and erector sets. We see them manipulating these materials, trying this and that, experimenting freely, finding out how things work. A significant experi-

[1] Ralph Linton, *The Cultural Background of Personality*. Appleton-Century, 1945, pp. 9-10.

ence with science is had by the four-year-old who plays with his spring wind-up toy car, enjoys the speed as it moves around the floor, who repeatedly investigates the car's inner workings and sums up his observations to his father thus: "Do you want to know how this thing works? The spring makes this big wheel turn. The big wheel makes this little wheel turn fast."

As these same young children go about the community with their parents they see the power of steam, electricity, gasoline being used to dig, to build, to move things. Buses, automobiles, trains, trucks, tractors, bulldozers, cranes and airplanes are seen at work by most children in their pre-school days. Living in the home includes for many children the use of the telephone, radio, refrigerator, electric lights, toaster and the care of pets. How? Why? Where? are the typical reactions of these children. Readiness for genuine learning is high in these situations.

Many wise parents recognize and value these first questions as an important aspect of the development of an inquiring mind. Many are meeting these questions with, "How can we find out?" and parent and child together plan and share in getting the information. In so doing these young children are having important experiences at their level of maturation in the various aspects of problem-solving. The development of faith in one's ability to solve problems has it roots in these early experiences in working on problems of real concern to the child. One is tempted to speculate on what it would mean for the development of all our children and for the enrichment of our democratic society if parents generally, as well as all others dealing with the very young, understood and valued the processes whereby creative intelligence is developed and gave favorable response and encouragement to the early manifestations.

Today's elementary school needs to recognize that children come to school with a highly developed readiness for further experiences in science. They bring a wealth of experience, information, know-how. All are curious. This background of interest and learning should be taken into account. The new learning experiences should further the development of inquiring minds by building upon the active curiosity and high interest in continual experimentation that is so characteristic of childhood. Far too much of elementary education is still characterized by the passive absorption of facts and meaningless drill on skills to the neglect of many important phases of development.

Science experiences are rich in possibilities of contributing to the total development and maturation of children. Teachers, principals, and super-

visors need to consider together what these contributions are, or can be, to the end that science experiences will better serve the needs of the growing child. Each elementary school staff needs to consider the relationship of the science experiences to the total program. Several aspects of development to which science experiences can make rich contribution are discussed briefly in the following paragraphs.

Science experiences can contribute to the development of inquiring minds and skill in problem-solving—We repeatedly remind ourselves in our writings and discussions that the success of a democracy depends to a large extent upon the ability and willingness of all of its citizens to use the method of intelligence in solving the problems that confront them as individuals and as members of groups. A significant beginning can be made in every elementary school to the development of this ability when teachers recognize that the earliest "how" and "why" questions can lead to rich first-hand experiences in the various aspects of problem-solving. The ability to solve problems can develop most satisfactorily in situations where boys and girls really want to find a solution to a problem that genuinely concerns them.

Through the wise use of the materials of science a rich contribution can be made to the development of inquiring minds and skill in problem-solving. Emphasis needs to be upon *doing*—on discovering problems, on planning experiments, on selecting, using and controlling real materials, on happenings which can be observed and recorded, on reaching conclusions and decisions. Experience in the whole process appropriate to their level of maturation is important for even the very young. Using experiments as a way of solving problems needs to begin in the pre-school and kindergarten and should be an integral part of the work of every elementary grade. Many elementary school children are having good learning experiences in solving some of their problems through reading, by consulting experts, through observations on trips. These are important ways of solving problems. Far too few are learning to plan and carry out experiments as a way of solving problems. Today's elementary schools need to provide more opportunities for children to learn through experimenting.

One has only to witness the radiant look on the faces of children as a new insight comes to them when they manipulate the materials and observe the happenings to appreciate how much joy there is in working out one's own problems. As children have more and more experiences in using experiments in solving problems, we find them growing in faith in them-

selves. This is evidenced by their willingness and enthusiasm for tackling new problems as they arise. Teachers and principals need to recognize that it takes time and materials to carry on experiments, and that there is no satisfactory substitute for these first-hand experiences in problem-solving.

Science experiences can help children learn to plan, work and solve problems together—Skill in solving problems is both an individual and a social skill. One of the great needs of our times is for increasing ability in working together on the solution of problems that are related to the security and welfare of all of us.

Children at each level of maturation in their group work and play will come upon problems whose solution is imperative to the on-going progress of their activities. In such situations, solving the problems becomes the genuine concern of the whole group. There is a real need to plan and work together. "How can we find out?" is truly *our* problem. Within the co-operative endeavor of solving each problem, individual ideas, suggestions and efforts are contributed to the common good.

Within such a framework of group problem-solving there are opportunities for individuals, committees, the entire group to plan, to set up and carry on experiments, to search for pertinent facts on field trips into the community, in museums, in libraries, and by consulting experts. In such group problem-solving undertakings, individuals will have many opportunities to develop their potentialities in work for the common good rather than in competition with each other. Each will be having some basic experiences appropriate to his level of maturation in participating in publicly conducted inquiries and in arriving at consensus through group endeavor. The use of the method and materials of science in the solution of these group problems can contribute significantly to the development of these highly important social skills.

Many problems identified by children in connection with their group work can be solved, in part at least, through experiments planned, set up and carried on by the group. "Does milk really make a difference in the growth of young things?" "What takes place inside an incubating egg?" "How do airplanes fly?" "How do the weather bureau instruments work?" "How do machines work?" all suggest something that can be tried out, materials that can be used and controlled. The kindergarten boys and girls who decide they need a doorbell on the playhouse which they have built cooperatively have a real drive for finding out how to connect the battery, the wires, the doorbell and push-button. When as a result of their planning, experimenting and working together, the doorbell is on

Science Experiences—4-5 Grade Children, School 80, Indianapolis, Indiana

the playhouse and actually rings, there is tangible evidence of success in solving a problem by working together.

Science experiences can help children in meeting some of their physical, mental, and social needs—The skills discussed in the previous paragraphs are definitely related to helping children meet some of these basic needs. Many aspects of sound mental health are directly related to the individual's confidence in his ability to solve his personal problems and in his ability to contribute effectively to the solution of group problems. Sharing in group problems contributes to a sense of belonging.

There are additional ways science experiences can contribute to physical, mental, and social development of children. Many aspects of bodily growth and development, muscular control and coordination can be fostered through manipulation of materials in carrying on experiments and in related science activities. Field trips and hikes, gardening, caring for pets, constructing model airplanes all make a contribution to physical development. Many new avenues of interest and satisfaction can arise in connection with science experiences. Photography, making rock collections, making insect collections, developing nature trails, developing home laboratories are interests that furnish children rich opportunities to carry

on creative self-directive activities. Children with special interests have things and ideas to share with their classmates. These interests can give them status and can bring them a feeling of success.

Science experiences can help children become an active, living part of their times—Children from their earliest days give many evidences of their willingness to understand and to participate in this technological society in which they are growing up. Many of the learning activities of the elementary school can make a distinct contribution to the understanding of the many uses of science in the community enterprises that characterize a modern democratic society.

One group studying pioneer life has questions concerning the water supply of the early settlers. Simple experiments with bacteria, with filtering water and with sedimentation bring out many important ways in which science is used in securing a pure water supply. A trip to the city water purification plant reveals a small group of men busy using many principles of science in maintaining a pure water supply for us all. Another group, as part of the study of foods, discovers on a trip to a large milk company that many scientific controls are being used to insure a safe milk supply for the community. In a sixth grade study of industries, questions concerning steam and electricity arise. The elementary understandings are worked out through simple science experiments and demonstrations. A trip is taken to the University power plant where coal is used to heat water in huge boilers, producing large amounts of steam pressure which is used to heat buildings and to turn the turbo-generators which generate the electricity for the campus buildings. The use of scientific principles for the good of the many is observed. Other scientific controls are seen being put to work in nearby water and land reclamation projects.

Such experiences are invaluable in helping children understand how much we are dependent upon the wise use of our natural resources.

Science experiences can contribute to the functional development of skills—Science experiences when carried on in the manner and spirit implied in this article will make heavy demands upon the skills needed for communication, for study, and for thinking. Speaking, writing, reading, observing, listening, experimenting, measuring, computing, organizing, and summarizing are all needed in carrying on science experiences.

Many of today's elementary schools need to make more creative and more functional use of science experiences in meeting the developmental needs of children. To this end, principals, teachers and supervisors need to plan together.

The Teachers Speak to Their Principals

LOUISA PIKE

Elementary Education Consultant, and Elementary Science Specialist, Public Schools, Seattle, Washington

"Science" means something highly technical that I know next to nothing about. Besides, I can think of no way in which this complicated and difficult thing I struggled with in college can give opportunity for enthusiastic learning activities for children.

Probably it was the high school and college teachers who first frightened me about science. I survived the "lending library of facts and ideas to be taken out one week and returned the next" era and became a good little conformer. I memorized with the best of them. But I developed a dislike for science and now that I have to teach it I am afraid of it.[1]

UNDOUBTEDLY this lack in the pre-service education which should have given us a love for science and confidence in our ability to find out things for ourselves is one of the greatest handicaps which you principals will need to help us teachers overcome. But our fears and misgivings are *learned* fears, so, with your help, they can be unlearned. Those of us who have become relaxed enough to admit we are learners with the children, and willingly try the "let's find out" method with the children, have already lost some of those initial fears. But we still lack confidence in ourselves and are inclined to eye your approach with apprehension.

We are most appreciative when you remember we were hired as specialists in childhood education and can make no pretense to encyclopedic knowledge in all branches of learning, and when you have faith that we have the potential capacity to become excellent teachers of science.

You can easily see how we need your help. We need it in securing materials. We want books, lots of them, as excellent sources of references for children and ourselves. We need sources to turn to when we readily admit, "I don't know, but let's see if we can find out." We need many sources because we are conscious of the wide variation of interests and ability in a given classroom and we want materials that encompass a cor-

[1] A Seattle teacher speaks. Through Louisa Pike, Seattle teachers express their ideas about "How principals can help us teach our science with increasingly better results."

responding range of interests and difficulty. Not alone do we need variety of reference books; we need equipment and space in which to store the simple apparatus which may be of use from year to year. Could it be arranged to have a "library of things" as well as books and visual materials such as films and filmstrips? It will help us to feel at home and secure when dealing with the content of science if we know where we can dip for subject matter background and leads as to experimental possibilities. We need help also in recognizing these aids as immediately functional in our everyday teaching.

Then when at last we get courage enough to organize our classrooms for worthwhile discoveries, we are grateful for a principal who understands that wholehearted investigation and experimentation means a certain amount of moving about and that everything we use will not always be a thing of beauty. Now and then sections of our rooms may look a little messy, for when we allow children to participate we can't expect adult order all of the time.

Before we try anything, however, we need to know that you think of elementary science as a tool, as a way of thinking, and not just as a body of content. We need confidence that you will recognize our plan to develop critical thinking in everything we attempt with children—not just during a block of time labeled "science." We want more than a program evaluated wholly in terms of the tangible, concrete objects of science one can manipulate, touch, taste, smell and see in our classrooms; we want—and hope you will help us keep our eyes focused here—the development of intelligent and resourceful behavior on the part of children both in and out of the classroom.

Many of us need help in surveying classrooms, homes, schools, and communities to make use of the many possibilities for science teaching. We need hints on ways to initiate a science program; all of us have much to contribute in cooperative curriculum planning for the total school living, for the interchange of ideas, for ways of working with children, for displaying the simple apparatus children have made, for demonstrating experiments children have tried.

We need your help in enlisting the support and interest of the parents and others in the community, helping them to recognize the importance and the potentialities of our elementary science program and to see it as a basic way for children to make discoveries and to solve their own problems as they explore the world. It is largely through your interpretation and administration of the program that you help decide the kind and de-

gree of value which the parents and the community assign to the teaching of science.

We need your cooperation in using the human resources of our community. Contributors outside the school must realize we are not showing weakness by admitting we are not walking encyclopedias. These resources are welcomed because they can make another kind of contribution to help children verify or find out something youngsters want to know.

Courtesy Public Schools, Long Beach, California

In planning excursions and field trips, we need policies which encourage and enable us safely to explore the out-of-doors. We need help in developing an organized plan for such valuable educational experience.

To help us, then, to get a feeling of confidence and an eagerness to learn more, we want opportunities: (1) to observe other teachers who are at ease with children as they attempt to solve problems using science materials; (2) to examine and have access to a wide variety of reference materials, books, filmstrips, films, simple equipment; (3) to manipulate simple materials for the learn-by-doing process we expect to use with children; (4) to plan ways for organizing safe and worthwhile field trips and excursions; (5) to utilize the human resources of our community wisely; (6) to have a time and place to discuss our common problems—asking questions, sharing information. No matter how well prepared we may have been at the time of our original employment, we need a systematic program toward further development and growth. Abilities that make for continuous success keep developing through the day by day solving of problems on which teachers and principals are working together and growing together.

Important Notice! You are urged to secure tickets for the Department's Anniversary Banquet as soon as you arrive in Atlantic City. Please note that the Banquet will begin promptly at 5:30 p.m., February 27, Strand Hotel. This early hour means that we can enjoy our program and then get to the Auditorium in plenty of time to secure good seats for the AASA meeting.

Principals Help the Teachers

HELEN A. BERTERMANN

Principal, Central Fairmount School, Cincinnati, Ohio

THE responsibilities of a principal include a continuous study of girls and boys, their needs and potentialities as well as knowledge of the world in which children live. Science occupies an important segment of the interests and lives of girls and boys in our modern world.

An elementary school principal is occupied with the day by day problems as is a teacher. However, unlike the teacher, the principal must, in addition to daily problems, devote time and thought to planning ahead, paving the way for changes, providing opportunities for growth in the school's program which will in turn result in the growth of the children.

Realization of the importance of science as an area of the elementary school curriculum has been slow. Many principals in recent years have been called upon to lead a staff of teachers to understand the possibilities of the enrichment of living that a study of science will bring. So, the principal helps teachers who are not aware of the science needs and interests of children, by pointing out these needs and interests and giving teachers the assurance they need to become better informed as adults in the implications of science. Many teachers are taking the initiative to approach principals for support and guidance in developing a science program. Encouragement of small beginnings—perhaps more nature hikes, a study of plant, insect, and other animal life in the school yard, a study of how modern science has affected their homes—has given impetus to expanding the science curriculum. It is no small task to encourage teachers to realize that it is possible for them to guide children to satisfying experiences even though they themselves did not major in science in college. This process often includes a thorough exploration by teachers and principal of what is included in a truly satisfying program.

Seeking experts for guidance where needed is a joint responsibility of teachers and principals. Many experts in the school community or city-wide community pass unnoticed by teachers. Many parents or other citizens have hobbies which, if shared with children in the classroom, will not only bring enrichment of knowledge but will also strengthen the ties of good community-school relations. The principal through more diversified community contacts is able to call attention of teachers to these help-

ful resources. Public museums, as well as owners of private collections, university libraries and laboratories usually welcome visits of children and teachers. Frequently the principal is the one to supply the information about such resources and to make the arrangements.

More and more, school systems are offering additional help to teachers through providing supervisors who are specialists in science. The principal, in large measure, may encourage the teacher in consulting such supervisors for help with specific problems. The principal often approaches the supervisor for help in specific problems when the teacher is hesitant in taking the initiative.

Teachers alone may not satisfactorily set up a good science program however strong the encouragement of the principal, even though the children fairly ooze with interest. The community must also sense the important place of science in the modern school program. An interpretation to the community of the place of science is an obligation of the principal. This may involve no more than approving a teacher's request to invite parents in to observe a program and demonstration as a culminating activity of a unit on electricity. It may mean pointing out to a teacher the possibilities of developing a science program, working with the teacher and pupils to produce an interesting one which gives evidence of the growth in the learnings and experiences of pupils. It may mean seeing that a teacher has space for her class to share a collection of rocks gathered from the neighborhood in a place where all visitors to the building as well as other pupils may see the display. It means interpreting to all concerned the important part science plays in the pupil's growth.

Many a classroom has become a rich laboratory for learning science through the ingenuity of its teacher. The school and not the teachers, however, should provide money to buy the equipment and materials that have to be bought—the books that will answer the hundred-and-one questions and supply the facts that the teacher may lack—the finances for excursions to furnish first-hand learning experiences, and the other expenses. As a rule, it is the principal who makes requisitions for supplies and books, and serves as the intermediary to the P.T.A. for extra financial help. Unless the principal is alert to the importance of such needs, anticipates them and is sympathetic to them, a good program may die. It should not be necessary for a teacher to defend requests for help and overcome administrative indifference or resistance.

Much advertising material passes over a principal's desk en route to the wastepaper basket. Pictures in the advertisements, charts and posters

may often be of use to teachers in their science work. The advertisements themselves may describe new books or equipment helpful to the teachers in science as well as other areas. Routing such mail to the teachers or posting it on the bulletin board may be of real help.

The professional reading of principals offers another source of help for teachers. An article marked for a particular teacher to read, a new book or an old one new to teacher and principal, if made available, will save the teacher a trip to the library, and will guarantee more surely that such additional information will be used and suggestions followed through. Lists of free and inexpensive materials should be available also.

Releasing teachers to attend meetings or demonstrations by their colleagues is a service a principal may render. It may mean teaching the class while the teacher is out of the building, but with careful planning this is not impossible or difficult.

Teachers need help in making better use of audio-visual materials. Choosing slides, film strips, and moving pictures that will offer the optimum help is a process requiring thought, care and planning. Arranging for loans from State Department libraries or ordering from commercial libraries usually requires planning months in advance. In these undertakings the principal shares leadership and responsibilities with faculty committees. Financing purchase of audio-visual equipment and encouraging wise use of it are problems that revert to the principal. Pointing out possible use of slide projectors, opaque projectors, sound projectors, mounted pictures, recordings and models by the principal may be the difference between these instruments becoming dust collectors or becoming a vital part of the instructional program. Letter writing for the purpose of ordering materials, catalogues, loan collections or the like is far easier for the principal to carry out in an office than for a teacher to take care of after school hours.

Seeking the assistance of experts from State Departments of Education, U.S. Office of Education, and national organizations may be set in motion and encouraged by the principal. Here, again, letter writing in the office offers a great boon to the classroom teacher.

In practice, a principal who furnishes adequate leadership must have the interests of the entire school program at heart to such an extent that the necessary help and encouragement to teachers are ever available. Planning for the science program and encouraging the teachers to develop ability to meet the challenging science needs of children are increasingly important in the over-all planning of the school.

SOME ON-GOING SCIENCE PROGRAMS

I. In a Suburban Community—We Use Our Own Resources

MARGARET C. McCORMACK

Supervisor of Elementary Education, Somerville, New Jersey

OUR in-service program in science came as an answer to teachers who were asking for help in this area. Our group analyzed their programs and found four important needs: (1) more experience with experiments—to get the "feel" of materials; (2) a better over-all picture of the elementary science program; (3) a wide acquaintance with new teaching and enrichment materials; and (4) an opportunity to exchange ideas with other teachers. With these objectives in mind we organized, using that much overworked title of "Workshop."

For help from specialists in the field, we invited Dr. William F. Lawrence, our supervising principal—a former science teacher—and Alice M. Courain, the head of the high school science department, to act as consultants. Dr. Lawrence was close to the needs of the group, and Miss Courain had long been our friend and helper. We had often gone to her for help, and she, in turn, had shared with us the white mice, the hamsters and other live stock from the high school laboratory. She came to us both as a helper and as a learner.

Because teachers are busy people, participation in the project was placed on a voluntary basis. Our invitation was open to all—people with good science backgrounds and those in need of help. In our group we had a good cross section from both levels.

My contribution, as supervisor of elementary education, was in the planning and organizing of content, producing equipment, setting up materials for experiments, procuring and displaying books—both text and professional—visual materials, advertising brochures, every type and source of teaching and enrichment material that I could find.

Since we were in the busy spring semester, the course was condensed into six after-school meetings. My preparatory work consisted of very extensive reading and examination of all types of new science material. Texts from the primer through the ninth year level were skimmed—magazine articles, professional books, all materials that would help me to give the

group an over-all picture of a modern well-planned science program. It was my purpose to demonstrate the fact that a good program utilizes children's interests; that science is all around us, an integral part of living. To help children solve these problems of living, to know the answers, to see the program in its entirety, we must know the sources to which we can go for help.

With these objectives in mind, our six meetings were planned around the five major areas in which children of all ages are interested and in which they normally encounter experiences: Living Things, Matter and Energy, Earth and Sky, Conservation, Health and Safety. This was a large territory to cover, but I believed that with the help of previously prepared bulletins we could, at each meeting, open interests and discuss some of the problems in each area.

In planning the meetings, the activities which should be included in a well-rounded program of science experiences for children were kept in mind: experimenting, reading, observing, taking field trips, and using visual materials. It was planned to expose the group, insofar as possible, to each type of experience.

The first requests had been for experiments. To fill this need, my weekly bulletins were organized to contain varied experiments on many grade levels, all relating to the topic under consideration. First, a concept was stated, then followed detailed explanations of how to perform each of the experiments; object—to prove the truth of the concept. With each experiment the source was quoted—textbook, teacher's manual, professional book, most often Arey's *Science Experiences for Elementary Schools* (see Selected Bibliography, p. 43 of this bulletin), all materials available in our schools.

Bibliographies were repeated several times in order to acquaint teachers with new books, with authors who were doing outstanding work, and with the publishers of the books and materials. One of the weekly bulletins was dedicated to the "problem" method of teaching science to give the classroom teacher some practical suggestions as to the "how" of working with science.

Before each meeting Miss Courain and I spent some time in organizing and setting up materials for experiments. We used our own science kits,[1] materials from home and classroom, and some of the simpler equipment from the high school laboratory. When observation of a continued process

[1] *Science Kit.* Developed by Gustav H. Koch, 1947. Science Kit, 204 Dexter Street, Tonawanda, N. Y.

"Observation" *Courtesy Public Schools, St. Louis, Missouri*

was necessary, Miss Courain or an elementary teacher-volunteer prepared materials a week or two ahead and had the experiment under way for our meeting.

Teachers and children contributed materials from some of their on-going programs. The children were interested and anxious to contribute to the "Teachers' School" as they called it. We displayed texts from all levels; rubber bands held them open at reference materials in the area under discussion. Teachers began to recognize the fact that to do effective work in science, as in any subject, each child must be taken at his own level, and that appropriate materials can be found at all levels of learning.

The greatest difficulty was met in getting teachers to work with equipment. We suggested that they work in small groups with materials suitable to the age level they taught. The experiments listed in the weekly bulletin were carefully graded for their use. Teachers were free to choose activities of interest to them. Some groups spent much time in examining books; others sat with our two authorities, asking questions and gathering background information. Some talked together, exchanging ideas, and others spent all of their time at the experiment tables—sometimes failing, but learning to try and try again.

Our first meeting had been planned on "Living Things," but because of certain stirring events in our immediate environment we made a quick change to "Matter and Energy." Four houses adjoining the school property were to be moved or torn down to make room for additional school buildings. Excitement ran high. Teachers found themselves deluged by questions: "How are the houses going down the street?" "Why don't the houses fall apart when they are moved?" To meet this "pressing present" our group meeting became a discussion and demonstration of pulleys, levers, the inclined plane, and the jack-screw.

For days we did little teaching indoors; groups watched every move and followed the houses down the streets to their new sites. Interest ran high until curiosity was satisfied. Every level in our school "majored" in machines for several weeks. Thanks to the building program, our workshop got off to a flying start. We were able to demonstrate the fact that a good science program answers pressing questions in the "here and now."

Results? Our small in-service activity accomplished several goals; it gave teachers an overview of the whole elementary science program. As one teacher expressed it, "I never saw this thing in one piece before. Now I can see how concepts grow as the child grows and experiences." It gave some teachers their first opportunity to handle equipment; for others it

Outdoor Study *Courtesy Public Schools, St. Louis, Missouri*

meant a wider and more professional acquaintance with books and materials. Our spring order attested to this fact—science books and materials were ordered intelligently to fit small groups and individual needs.

There seems to be a new and vigorous interest in science this year. There are evidences in classrooms; children are asking many questions. "Why was the moon shining when I came to school today?" asks the seven-year-old. A third grade is distressed by the untimely death of their goldfish. "Why won't they live in the Somerville water?" "What can we do to make the water safe for our fish?" The six-year-olds are finding pictures in books to prove that the gaily colored leaves brought in from a "tree walk" are oak and maple.

These and many more problems are coming every day—children's problems, with teachers and children working together to find the answers. Books and materials are much in demand. We feel that our workshop did not end in April; it goes on and on.

Our experiment proved that within our own groups we have the means of organizing in-service programs which, because of their simplicity and homemade quality, can go surely and directly to the solution of our problems.

II. In County Units—The Workshop Way

DOROTHEA M. WEIN
MYRTLE M. TOWNSEND

Helping Teachers, Middlesex County and Camden County, New Jersey

IN order that the teacher and Helping Teacher (rural supervisor) may focus attention upon the learning in the classroom rather than upon the teacher's performance, they agree upon a common problem on which they will work during the year. The Helping Teacher may have a different continuing problem with each teacher. As several teachers show interest in the same problem, however, a group may be formed to exchange ideas.

Continuing Projects with Individual Teachers—The following are typical continuing problems with which various types of teachers have been concerned:

How can I help my group to find science information in many different ways and from a variety of sources? (formal teacher)

How can I sell to the community the value of taking children outside the classroom to learn? (teaching principal)

How can I make my Discovery Table a vital part of the science program? (beginning teacher)

How can I make experimenting a learning activity rather than "a bag of tricks"? (high school teacher working in the elementary school without elaborate equipment)

How can we select our science problems so that the children will get acquainted with more than one area of science in a school year? (teacher who had never taught science)

How can I improve the quality of pupil thinking in my classroom? (successful, experienced teacher)

How can my science program be adjusted so that the poor readers can make real contributions? (teacher who studies her group as individuals)

What science resources are there to explore in this community? (new teacher in community)

Teachers Observing Each Other's Work with Children— Teachers in these counties have found it helpful in a number of cases to observe each other's work with children to clarify their common problems.

Three teachers who were experimenting with various ways of getting children to organize their questions for study profited by watching the reactions of each other's groups of children (a) as they recorded questions raised by the group; (b) as they combined similar questions; (c) as they suggested headings for groups of questions; (d) as they planned ways for finding answers; (e) as they suggested the order for studying various groups of questions.

A variation of this procedure was listening to a science lesson recorded in the classroom of one of the teachers and evaluating it by standards set up previously. In one case the standards were as follows:

1. What was the definite question for study?
2. What part did the children have in setting up the problems for study?
3. Were the children given the opportunity to state their hypotheses before experimenting?
4. What new learnings took place?
5. How did the children find their facts?
6. What conclusions did the group reach?
7. Did the children have enough facts to substantiate their conclusions?
8. Was there any evidence that behavior would change because of this lesson?
9. Were the children satisfied with what they had learned or were they anxious to carry the study further?

Planning to Work on Common Problems—*Steering committees,* composed of teachers especially interested in science, building principals, and Helping Teachers, share accounts of successful science teaching and discuss factors that block better work in science. On the basis of these discussions, such activities as the following are planned: (a) trips for teachers to explore local science resources; (b) previewing movies and selecting filmstrips for various purposes; (c) suggesting books of varying reading levels which will supply children with science information needed to solve certain problems; (d) developing kits of simple science equipment for teachers to borrow and add to; (e) discussing where teachers can get help when children ask questions they cannot answer; (f) holding joint meetings with other county teachers, with schedule as follows:

4:30-5:30 P.M. The two groups meet and have dinner together.

5:30-6:30 P.M. The teachers plan and take part in a firsthand experience such as one of the following: (a) experimenting with the wire recorder; (b) visiting the heater room of the school and consulting the janitor about how the heating system works; (c) interviewing the expert from the

telephone company or visiting the local telephone exchange; (d) arranging an aquarium as you would do it with the children; (e) looking through a telescope; (f) watching the eggs hatch at the pheasant farm nearby; (g) visiting the penicillin factory; (h) experimenting with soil testing materials; (i) dividing into groups and enclosing any area in the school yard with a six-foot piece of string, listing all the science "leads" found within the enclosed area; (j) visiting a greenhouse nearby to see how the florist kills pests. The planning includes listing the questions the group wants answered. During the experience the teachers find answers to their questions and take notes of facts they want to remember.

6:30-7:00 P.M. The teachers discuss the answers found, summarize their learnings and formulate conclusions, and analyze "how they learned." The teachers also set up criteria for planning firsthand experiences for children, and evaluate their own experience in the light of these criteria.

7:00-8:00 P.M. The group works on a resource science unit including experiences children have had which would lead to an interest in the problem, children's questions growing out of these experiences, activities of various kinds which would help to answer the questions, useful information and children's science references. Only those activities and information which help to solve the problem are acceptable.

8:00-9:00 P.M. One group travels home and the other group clears away the dinner, puts away materials and books used.

Requests from the teachers for more time to work has led to the planning of three-day workshops. The first day the primary teachers attend and their classes are dismissed. The second day we give our full attention to the middle grades. On the third day, the uppergrade teachers take part. Thus, the entire school is not closed and the teachers profit from working in smaller groups during the best hours of the day. Building meetings following the workshops often help to tie together the activities of the three days.

Participating in State Science Programs—The principals and their teachers attend meetings of the New Jersey Science Teachers Association held in three sections of the state. Here they take part in such activities as: (a) listening to the philosophy of good science teaching as presented by experts in the field of science; (b) discussing how the philosophy applies to the classroom teaching of science; (c) bringing evidences of children's interesting science experiences to share with each other; (d) exploring various science resources of New Jersey, such as the RCA Research Laboratory at Princeton, the Experimental Agricultural Farm at Rutgers University, or the Lenox Pottery at Trenton.

Cooperating with Teachers Colleges—Pre-service-In-service Coordination is encouraged in several ways: (a) small groups of teachers and Helping Teachers participate in conferences; (b) student teachers visit in groups to see the on-going science program; (c) teachers attend annual conservation workshops held for two weeks in the summer.

Summer Workshops on the university level provide opportunities for teachers to earn six points of graduate or undergraduate work in science. Extension courses in various sections of the state supply the same opportunities. Principals, teachers, supervisors, and members of the State Department of Education participate in these workshops and plan ways of carrying on their science programs after the courses have been completed. Typical activities carried on by these groups include:

Evaluating courses of study in science from various places and studying the programs in the light of the philosophies expressed.

Learning to find information on the adult level through observing, consulting, experimenting, discussing, reading, and active listening.

Writing source units to be actually used in classroom situations. Such problems as the following have been explored in this way: Why is the work of the weather bureau important? How does our community get its water supply? How can we control helpful and harmful insects?

Planning the total science program for a school, a community, or a county. Blocking out typical problems in various areas of science for different age levels, discussing what children of various ages are like and how these characteristics affect their science interests, exchanging ideas for purposeful science activities, getting acquainted with children's books and simple science equipment.

Discussing how to help children use reference books effectively and efficiently in place of a basic textbook in science.

Evaluating typical science lessons. For example, planning for a visit to see local peach orchards sprayed as it was done by a sixth grade group; a discussion by an eighth grade class in which pupils listed factors to consider in taking good pictures and referred constantly to references to back up their statements; an account of a third grade's observations as they followed their trail through the woods nearby to note seasonal changes.

Watching children at work in science classes and observing how they learn.

Evaluating and rewriting parts of the New Jersey State Science Bulletin.

III. In a City System—Science in the Elementary School

BONNIE C. HOWARD

Supervisor, Intermediate Grades, Louisville, Kentucky

SCIENCE in our elementary schools furnishes an avenue of interest which quickens the searching, questioning attitudes of children. In this program they learn how to observe carefully, to search for an explanation of things which happen and to reject guessing and faulty thinking. They grow in the ability to plan and perform simple experiments and share information relating to vital problems. These experiences lead to new interests and furnish the drive for reading and research.

We agree with Glenn Blough, however, when he says, "To learn science, to enjoy it and make it functional in the lives of boys and girls, it must leave the pages of a book and get into their daily experiences in a graphic way." When our teachers have had sufficient time to use our new Science Course of Study, *A Source Book of Science Experiences for Elementary School Children,*[1] they will appreciate the many ways children learn science—and that reading is only one of the ways. In September 1949, this new Course of Study—three multigraphed volumes—was issued from the Curriculum Department where the actual production took place.

The Science Production Committee was made up of two elementary teachers, one from the primary and one from the intermediate department. They were full-time workers in the curriculum laboratory—with no classroom responsibilities.[2] These teachers were assisted by two groups of workers—*the Committee of Schools,* composed of a representative from each elementary school in the city and the *Advisory Committee,* a smaller group selected from this larger committee.

The tentative plans of the Production Committee were always referred to the Committee of Schools. The representative from each school discussed these plans with the teachers in her building and reported any suggested changes to the Production Committee. Not only did the Production Committee get needed advice from the Committee of Schools and

[1] Curriculum Bulletin 11, *Elementary Science,* Part I, *Kindergarten and Primary Grades.* Part II, Vols. I and II, *Intermediate Grades.* Assistant Superintendent, Louisville Public Schools. Multigraphed.

[2] Editor's Note: A unique situation—two classroom teachers released from teaching responsibility for a year to act in the capacity described here.

Advisory Committee, but much information was also secured by means of questionnaires, classroom visitations and conferences with teachers. Thus, each teacher in the system was given an opportunity to participate in planning the new course of study. The Production Committee discussed plans with the superintendent's staff, the supervisors and curriculum directors. The actual writing of the course, however, was done by these two classroom teachers.

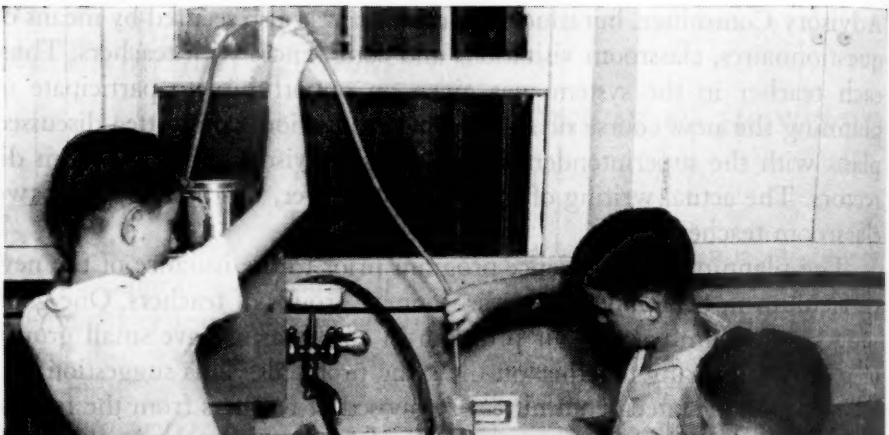
The planning of the science program prior to the issuance of the new curriculum in September 1949 was done by groups of teachers. One good suggestion submitted for our program in 1948 was to have small groups of teachers working together on the same problems. This suggestion was followed; soon sixteen committees composed of teachers from the fourth, fifth, and sixth grades were organized and hard at work. At the small group meetings there was time for pooling ideas, for organizing the unit, and for discussing simple, suitable experiments to use in clarifying particular scientific concepts. Additional experiments, not given in the Teacher's Manual, were described; lists of source material such as books for children, pictures, bibliographies for the teacher's use were exchanged; the values of types of visual aids clarifying scientific concepts of a particular unit were discussed; other new ideas for promoting interest and understanding were shared. The social and educational values of these small informal meetings proved to be most worth while.

Following these small group meetings these teachers would try out plans and new ideas with their classes.

In order to eradicate the possibility of children considering the experiments as a series of "stunts" or "displays of magic" the following points were included in a bulletin to teachers:

1. Choose scientific concepts within the range of understanding of your group. There will be "another day" when that which is learned at one level will be used as a springboard for new experiences—motivating a higher level of scientific thinking.

Telephone Experiment *Buena Vista School, Colorado Springs, Colorado*



Water Seeks Its Level *Courtesy Public Schools, Los Angeles, California*

2. Use simple apparatus. Learning takes place when children working alone or with the teacher construct the apparatus. Materials borrowed from high school laboratories often confuse rather than clarify.

3. Encourage children to plan with you, to repeat experiments, sometimes at home, to search for additional experiments which would clarify the same concept, to observe carefully, to formulate a conclusion and to check it by further experimentation, and to read information written by scientists before they begin to generalize. This will require time, but critical thinking cannot take place when the instruction is too hasty.

4. Help children see implications of an experiment to life around them.

5. Leave them with a questioning attitude—there will be more to learn as they mature mentally.

After several weeks these committees planned grade meetings at which time they shared their findings with all the teachers of a particular grade. Some of the teachers performed the experiments themselves, either to illustrate how to develop scientific understanding or to show use of equip-

ment. Other teachers brought their children to perform and explain the experiments.

Each committee chairman working with her committee compiled some of the science experiments not included in the Manual. These new experiments which contributed to an understanding and appreciation in the child were mimeographed and given to each teacher at the grade meeting.

In order to show the extent of our science program, the children and teachers planned to have an exhibit. As they worked on the various units in their classrooms, they helped to plan it. They suggested setting up particular experiments; they saved the interesting things which they made to clarify particular concepts—charts and graphs and all types of pictorial material were brought in. At the close of this experimental period, it took only a few days to transform the large exhibition hall at the Board of Education into a most interesting Science Fair. Thousands of children, teachers, and patrons of the school came to enjoy the intriguing display. There were water wheels to show the force of water, electric quiz boards that would answer questions, a well-balanced aquarium and a terrarium, a planetarium made by a fourth grade class, simple machines to show the work of the pulley, the lever, inclined planes, etc. It was interesting to watch the spectators try out the various gadgets on display.

By this time, plans for the new course of study were far enough along to enable us to organize the Fair so as to correspond with the six broad areas used in *A Source Book of Science Experiences for Elementary School Children*. Thus, the way was paved for a ready acceptance of our new course of study, now available for use and evaluation by the teachers.

Of Special Interest to Department Members

Save These Dates for Our Meetings:

1. **With the AASA, Atlantic City, New Jersey, February 27—March 2**
2. **South Central Regional Conference, sponsored by the Department, Fort Worth, Texas, March 23-25**
3. **With the NEA, St. Louis, Missouri, July 3**

(See pages 38, 46-48 of this Bulletin)

The Principal Helps Teachers to Utilize Community Resources

DORIS D. KLAUSSEN

Principal, Ann J. Kellogg School, Battle Creek, Michigan

THE environment for science is the wide horizon of the child's own living. The home, the school, the community, the near-by park, the airport, the farm, the lake, the local museum, the zoo, the dairy, the health department, the farmer's market, are all features of the environment useful in opening the way to real science teaching.

Every community is rich in resources that are very vital in good teaching. Each community has its own particular resources, and the principal of the school is in a key position to know about these resources and can do much to help teachers to utilize them. Why? First, because the principal has, in most cases, lived several years in the community. Second, she has perhaps taught before becoming a principal and has used community resources. Third, she knows what use other teachers have made of the experiences in the area. Fourth, she is in a position to know what teachers in other schools are doing. From this background of wide experience and knowledge the principal can point the way and lend the helping hand in use of community resources.

What are some of the ways in which principals can help teachers to widen their use of community resources?

1. Principals can help to provide a free, permissive, creative atmosphere in the school which inspires teachers to enrich their teaching.

2. Principals can, as they work with teachers, suggest resources that may be used to broaden the work. For instance, in an elementary school the fourth grade was delegated by the Elementary Student Council to have charge of planning and planting a small garden plot in front of the school. The principal was called in to help with the job. Some of the things suggested by the principal were: using the Farm Bureau to test the soil; asking the advice of a local gardener in planning; going on some neighborhood trips to see garden plots; visiting another school to see what they had done; visiting a greenhouse to see various kinds of plants.

In each area of science study, there are opportunities for the principal

Caring for Pets *Courtesy Public Schools, East Orange, New Jersey*
Photo by Liveright

to help point out and make it easy for groups to make use of available people, places and things.

3. Principals can help to keep teachers posted on interesting events going on in the community and show ways in which these events can be of value in the school's program. Sometimes taking the teachers on a trip (in place of a faculty meeting) is a very good thing. One principal had one of the faculty meetings at a local museum. There the teachers could meet the curator at the museum and see for themselves the resources in the museum for teaching. Another principal planned four faculty meetings during which teachers would visit various interesting parts of the city that had good possibilities for science teaching—a local food factory, a near-by bird sanctuary, a radio station, and the health department. From these four trips much vital teaching resulted. It does a teacher good to get out of the four school walls and to do some learning again from real life. It is the best way in the world to keep her sensitive to the wealth of possibilities and resources in the community. She is certain to be more understanding, more resourceful, more helpful, more vital in her teaching. And, besides, she is bound to have more fun.

4. Principals can keep a cumulative record of all resources found especially useful for science teaching. And they can not only keep these but

constantly bring them to the attention of the teachers. For instance, a teacher and her group were studying the water supply of the city. The principal suggested: making a trip to the spring wells which were the source of the water supply; calling in the city chemist to help them understand water purification; showing movies available from the school's Visual Education Department.

In some schools a committee of teachers takes the responsibility of keeping a card file of all community resources. The file includes information about these resources, steps to take in making arrangements for their use, and how to use them. These cards might include information concerning: a man who keeps bees; an amateur radio operator; a chemist whose laboratory could be visited; a dentist or doctor; an aviator; and many other persons and places.

5. Principals can encourage the writing up of science units carried on by the various groups. These science units should always include bibliographies and community resources used. The units, if kept and revised, can be very helpful.

6. Principals can arrange for units being carried on in one room to be shared with other rooms. This can be done by a teacher describing her work to others, by children reporting in other classrooms, by displays in halls, by bulletin boards, by classes visiting other classes. This interchange between groups is helpful in stimulating wider use of community resources.

7. One principal kept a list of important things going on in the community posted on the office bulletin board. Under each topic there were a few suggestions for use in the classroom.

Whenever community resources are used in a school science program there are certain considerations to be kept in mind. When pupils have contact with a person, place or thing in the community, the public relations of the school are involved. Principals and teachers need to be sure that there is careful teacher-pupil planning involved, that good conduct is assured, that real learning takes place. Pre-planning, sincere attention during the event, and discussion following, are important parts of all use of community resources.

"As is the principal, so is the school" is a time-worn saying but has much in it of truth. The teachers in a school look to the leader for help, inspiration and enthusiasm. The principal who will help teachers *discover* and *utilize* local resources in science teaching is giving a much needed and worthwhile service to the teacher, the child and the community.

Science and the Total School Program

LEVERSIA L. POWERS

Chief, Elementary Education, Pennsylvania Department of Public Instruction, Harrisburg, Pennsylvania

SCIENCE and the scientific method of thinking permeate Pennsylvania's Elementary Course of Study.[1] Teaching is concerned not only with the acquisition of facts but also with the habits and patterns of thought which are established. This is, of course, true of all aspects of the curriculum, those usually thought of as skills as well as the content fields. All who helped produce this new bulletin were imbued with this idea. The committee charged with the responsibility for the field of science therefore developed it in all its relationships to all aspects of living and learning.

The Social Living Area—The Social Living Area is seen as involving all of the experiences of the school program designed particularly to help the child understand and interpret his world and to live competently in a dynamic, democratic society. Studies of the natural world and the processes by which it became as it is; studies of the various peoples of the world and how and why they live as they do; and studies of the historical events as they deal with the activities of peoples in the past which influence his present and future—all these help the child to understand the world about him, and to deal with it more intelligently. The fields of the social and the natural sciences—history, civics, geography, and science—assume their true roles, not as separate areas with opposed objectives but as interacting factors in the solving of any social problem.

An understanding of the interrelation of our cumulative heritage and of natural forces is needed for intelligent participation in a democratic society. Scientific invention is rapidly increasing the interdependence of people and all but eradicating the natural barriers which have separated nations. At the same time it is creating problems of world relationship. Teachers in the elementary grades are quite generally aware of the interrelationship of history and geography, but still largely teach science as a separate and highly specialized subject, or not at all. Unit planning has shown that science is really a part of everyday life. It is a necessary and natural factor in the solving of any social problem. Likewise, few

[1] Commonwealth of Pennsylvania, the Elementary Course of Study, Bulletin 233-B, an Interim Report. Address Editor, Department of Public Instruction, Harrisburg, Pennsylvania.

natural problems are unrelated to social and geographic considerations. The use of the scientific method for problem-solving is not confined to science alone. Rather, the scientific method is the contribution of science for use in every phase of the study of group life.

While it is not the purpose of the elementary school to produce historians, geographers, or scientists, well-adjusted children need to be equipped with the techniques for selecting and solving problems and for incorporating their results into constructive, democratic living. It is the responsibility of the school to provide meaningful background and experiences that will help the child to become a successful member in his present social group, thus leading to competent living in a world society. It is recognized that such a person will need to be highly skilled in the art of personal living as well.

If the principles of democracy are to be understood and to become an integral part of the child's behavior patterns, they must be practiced in his daily school program as well as in his home and community programs. He must constantly experience interdependent living. This area, therefore, includes experiences which help boys and girls understand, appreciate, adjust to, and control the elements of their natural, technological, and social environments. A variety of problems in all fields, set up as units, is recommended as the method of presentation. Therefore, some of the units are based on social problems and some are confined more closely to subject fields. All units, however, have been planned to increase understanding of our cumulative heritage and the natural forces affecting our daily living. Clubs, discussion periods, socialized room organization and projects, continued over an extended period of time, constitute a valuable part of the program. While the basic over-all purposes will be similar, procedures are flexible because they must be based on the needs and abilities of each child.

Thus the new Pennsylvania Course of Study recommends that science instruction be integrated with geography and history into a larger area called "The Social Living Area." Units at all levels are suggested which have scientific, historical, and geographical aspects. All of them are *social* in emphasis. In many teaching situations it will be impossible for the casual observer to tell whether the class is being taught science, history, or geography. Such a procedure provides many economies in time. In other cases, integration seems impracticable or so far-fetched as to be undesirable. Integration is not suggested for such units although the unit itself is a planned part of a total program.

The Health Program—Much science is included in the total program for health. This includes healthful school living, a term that designates the provision of a wholesome environment, the organization of a healthful school day, and the establishment of such pupil-teacher relationships as make a safe and sanitary school favorable to the best development and living of pupils and teachers. A healthful school environment provides a means of teaching health indirectly. It helps to make healthy, happy pupils and tends to raise home and community standards to scientific principles of cleanliness and sanitation. This has been emphasized as the responsibility of teachers and administrators.

Health instruction is defined as that phase of education which seeks to provide experiences and instruction for the promotion of attitudes, practices, habits, and understandings directed toward the improvement of individual, family, and community health. Units of instruction include those on nutrition, including the study of alcohol, stimulants, and narcotics; sanitation, body mechanics, and safety, and other areas which must essentially be based on scientific findings and the scientific method.

The Language Arts Program—Science is also a part of the total language arts program. The language arts chapter is organized under the abilities to listen, observe, speak, read, write, and spell. Obviously to do any of these one must have something to hear, to observe, and to talk and read about. The science of things about them greatly interests children and is therefore seen as fruitful language arts material. When one teaches children to listen purposefully, accurately, critically, and responsively, there is no place where one can draw a dividing line between language arts and science.

Keeping records is a skill in written language. Through the keeping of individual and group records of work under way, children are aided in developing ability to organize in logical sequence. They provide, too, concrete examples of achievement so that the children are aware of what has been accomplished and what needs to be done. Such types of records may range from daily weather records in the first grade to the keeping of thermometer and barometer readings at the sixth-grade level. They may be, of course, concerning any aspect of the day. Again the dividing line between science and language arts cannot be sharply drawn.

The Arithmetic Program—Science is also seen as an integral part of the arithmetic course of study. Increasing emphasis is placed on the social learnings involved in arthmetic along with the emphasis on developing computational skill. For example, when children encounter problems in

making things, in studying about such matters as conservation, nutrition, and simple mechanics, their arthmetic skills are improved through the use of numbers in important situations. Increasing attention is also being given to space concepts because of recent developments in aeronautics and astronomy.

The objectives of arthmetic teaching include developing an appreciation of how numbers have facilitated human progress, and of the social significances of arithmetic in the affairs of life. There could have been, for example, no radio without a knowledge of numbers. It is also important and possible to develop an inquiring attitude of mind through the use of problems for which the pupils must seek basic facts and numbers in encyclopedias, census reports, newspapers, and basic books in the content fields.

Social application includes developing and clarifying the arithmetical processes used in the scientific aspects of the home, school, store, bank, sports, travel, farming, and other industries, and the many everyday problems which arise in the children's own daily activities. Examples would be the relation of speed of car to time it takes to stop; time spans in growth—yearly crops, trees, and various forms of animal life; pressure gauges on furnace, pressure cooker, and the significance of the position of the indicator; barometer and thermometer readings; making or interpreting weather maps in daily papers, involving drawing to scale, ideas of "lows and highs," rate of approach of storm, wind velocity, and pressure.

Summary—Science instruction in the Pennsylvania Course of Study is thus cared for both directly and indirectly. A careful analysis has been made to see that instruction is balanced and sequential. Some units of instruction are almost entirely science in content, others are not. Science permeates the whole day—the schedule, the management of group living, the patterns of behavior, the selection of content, and the methods used in all subject matter areas. We believe that science should be literally "in the air" in the schools of today.

Our delight in any particular study, art or science rises in proportion to the application which we bestow upon it. Thus, what was at first an exercise becomes at length an entertainment.

—JOSEPH ADDISON

A State Principals' Association Implements the Science Program

BERNARD W. KINSELLA

Principal, Allen Creek School, Rochester, New York

AN increased interest in the teaching of elementary school science was evidenced during the early months of 1945 by many individual members of the New York State Association of Elementary School Principals. This interest was channeled into coordinated action by the Educational Progress Committee, a standing committee of the State Principals' Association. A sub-committee, the Committee for the Study of the Teaching of Science, was appointed in the fall of 1945 to study the status of elementary school science teaching in the schools of New York State.

The Committee's Task—As a result of several exploratory discussion meetings, the committee arrived at the decision to set for itself a two-fold task: (1) to find out the status of science teaching, which includes the extent to which elementary school science is being taught, and how it is being taught; (2) the working out of means through which principals can be helped to meet the needs as revealed in the study.

The Questionnaire Study—Discussion at these exploratory and planning meetings was also concerned with investigating ways in which information could be most accurately and effectively gathered. A questionnaire was developed which consisted of ten questions concerned primarily with practice. The questions were directed toward finding out the course of study used, the time allotted to the teaching of science directly and incidentally, who teaches science, and the factors which, in the opinion of the principal, aid or handicap the teaching of science in the elementary school. Requests were made also for examples of activities being carried on in science which the principals thought particularly successful. The final question asked the principals to state what would help them most in developing their science program.

The committee hoped that the questionnaire would highlight the need for a functional science program in every public elementary school and that it would stimulate principals to do some thinking about it—thinking that might later be translated into action. A trial edition of the questionnaire was sent to fifty principals in January, 1946, to discover whether

or not the questionnaire would serve the purposes which had been set up. Weaknesses in the questionnaire as disclosed by this try-out were corrected.

In February, 1946, nine hundred fifty revised questionnaires were sent out to the association membership. Six hundred twenty replies were received. For tabulating purposes, the membership was divided into four groups: (1) elementary schools in supervisory districts (not including any schools with fewer than four teachers); (2) union free schools (schools in village superintendencies); (3) city schools; and (4) central schools. The committee hoped that this method of tabulating might reveal information peculiar to the different types of schools and locate significant differences if any existed.

The responses were compiled and a mimeographed copy of the findings was sent to the principals. This preliminary report followed the sending out of the questionnaire by only a few months, and coupled with the interest generated by the questionnaire, brought forth evidences of further active interest on the part of elementary school principals.

Committee Members Work to Put Theory into Practice—From principals all over the state there came to committee members requests for assistance in developing effective programs. These requests were met in a variety of ways. Members of the committee visited other schools, upon request, and held professional meetings with teachers and principals. Discussions were devoted to such problems as, "How can science experiences contribute to social growth?" "How can the problem-solving method be used in the teaching of elementary school science?" and "How may simple science equipment and materials be obtained?"

Some members of the committee served as consultants at State Teachers College workshops devoted to the teaching of elementary school science. Members also accepted chairmanship of some of the large group meetings at the New York State Teachers Association Zone Conference. Directed observation lessons were presented at some of these meetings. Mimeographed material, designed to help teachers in their planning and working with children through science experiences, was distributed.

Progress reports were given at the annual conferences of the New York State Association of Elementary School Principals. At one of the conferences a half-day session was devoted to elementary school science.

Throughout the approximately two years during which the committee devoted itself to the questionnaire study, to the preliminary report and to the numerous ways of meeting principals' requests for assistance, the committee members were also working out ways of implementing the

teaching of science in their own school areas. This latter phase of the work comprised the "trying out" of ideas for the purpose of appraising and testing their usefulness before writing them up for inclusion in *Science for Our Children,*[1] the report of the committee. Each committee member worked with his teachers in his own school and in at least one neighboring school. Programs of science teaching were worked out. Techniques were tried and objectives in the teaching of science were being developed in practice as well as in theory by faculty groups.

Committee members were cognizant of their responsibility to study writings and research in the field of general elementary education and in elementary school science in order that the committee would make more comprehensive and valid recommendations to the elementary school principals. It was felt that these recommendations would therefore more nearly reflect the objectives of the elementary school and would include ways in which science teaching could contribute its share to these objectives. Committee meetings were often devoted to a consideration of findings in research in relation to observed practices and in relation to objectives and practices noted in courses of study. Thus the committee, through findings gained through the questionnaire, interviews, observations, practical applications, and research was preparing itself for its final step, that of writing the report.

The committee divided among its membership the responsibility for writing the several sections of the report. The final report, however, reflected the findings of the complete committee. The chapters of this bulletin offer information on the background of science teaching in New York State, report findings on the present status of science teaching in the public elementary schools of the state, suggest helpful supervisory practices for principals, describe some specific characteristics of an effective elementary school science program, and outline the program offered in colleges to prepare teachers to carry out effective science programs in the elementary schools of New York.

Among the recommendations made by the committee in its report are these: (1) Principals need to encourage teachers to teach science. This encouragement can best be developed through principals working with their teachers. (2) There is need for specific help in the area of teacher

---

[1] *Science for Our Children,* Bulletin XII. New York State Association of Elementary School Principals, 1949. (May be obtained from the Bulletin Distributor, Charles E. Flinn, 1152 Harrison Street, Watertown, New York.)

preparation and in-service training in science. (3) Better physical facilities for the teaching of science should be developed. Schools should have more and better equipment and materials although many doubt that this is what holds the program back. There is need also for a wealth of audio and visual aids to assist in the teaching of science. (4) There is need to supply schools with more interesting reading materials and a greater variety of science reference books. (5) There is need for a definite program in science and a realization on the part of both administrators and supervisors of the importance of science in the life of our children today.

It was not planned that this bulletin would be a compendium of research nor was it to be a course of study. It does report what the committee believed to be some representative good practices in science teaching in New York State. The authors of the bulletin hoped that the material would be helpful for principals to use as a basis for comparison and evaluation of programs in their individual schools. It was believed, too, that the bulletin would be helpful as a guide for discussion groups. Although the committee realized that the bulletin did not answer all of the questions raised by principals, it was hoped that principals would be stimulated to re-examine their entire instructional programs to see that science received the proper share and kind of emphasis.

Committee members felt grateful for having had a part in what they believed had been a most worthwhile learning experience for them and an important project of the association. Their conviction of the crucial need for an understanding of the role science plays in the lives of all of us today and of each individual's responsibility for the wise use of its contributions encouraged them in their work of improving the science program throughout New York State.

NEA ANNUAL MEETING

The National Education Association will hold its eighty-seventh annual meeting at St. Louis, Missouri, July 3-7, 1950. Registration will open Sunday, July 2, at the Kiel Auditorium and continue through July 5.

Meetings of the Department of Elementary School Principals will be held on **Monday, July 3.** This preliminary announcement is to enable our members to reserve the dates. Hotel reservations should be made through the Hotels Convention Reservation Bureau, N.E.A., Room 304, 911 Locust Street, St. Louis 1, Missouri, which will open on March 1.

Obtaining the Materials for Science Teaching

MARJORIE H. CAMPBELL
GERTRUDE D. HOWARD

Elementary Science Teachers, Public Schools, Washington, D. C.

HOW many times have you said this or felt this way:

"My teachers can't teach elementary science."

"We have no materials."

"We have no money to buy science materials."

"If science materials were available to us, frankly, I wouldn't know what to order."

Isn't it true that the mere term "science materials" brings to your mind the apparatus with which you struggled in the science classes of your own secondary education? Have you ever thought that the science equipment and materials appropriate for the elementary school are very simple and inexpensive? This kind of material is easier for children to use and understand. It meets their needs in problem solving far better than expensive, complicated apparatus.

A class interested in the study of weather was confronted with the problem of measuring the rainfall. Naturally they had no rain gauge. A ruler and a tin can made a rain gauge for this group that helped them solve their problem. Another group studying aviation made a workable air sock from mother's old stocking, a piece of wire, a lath and string. A fifth grade developed a functional understanding of levers from the many levers mother uses every day in the kitchen.

Collecting this type of equipment is not too difficult. A large part of it can be secured from the neighborhood at little or no cost. Tin cans, saucers, empty jars of various sizes, pieces of wire, candles, even a hot plate are all needed for children's science experiences and can be obtained from any school environment. The grocer may have empty candy or pickle jars that can be used for building aquaria and terraria. The junk dealer will prove to be a gold mine. Magnets, large jars, bells, metals of all kinds are sure to be found in his stock. The local florist or nurseryman will have flower pots, soil and plants for various experiments. The far-seeing principal will encourage the teachers and the children to tap the rich sources

of supply in the home, neighborhood and community. The responsibility for the acquisition of materials should be undertaken cooperatively by principal, teacher, and pupil.

It is true that all needed equipment will not be as easily obtainable as the items mentioned above. Some items can be made. Your school system itself can come to your assistance here. The custodian can be called upon to help the children make such things as animal cages, insect cages, seed germination boxes and weather instruments. The older boys in the wood shops can make racks for materials, wind vanes, planetaria, demonstration materials such as boards to show different types of electrical wiring or how to wire a bell and batteries.

The neighborhood junior and senior high schools are still other resources which can be tapped. They usually have very good science equipment and may be willing to lend, for a short time, such things as microscopes, magnifying glasses, thermometers, barometers, magnets, compasses, or tuning forks. However, this would be merely a stopgap procedure. It is best for each school to start building up its own collection of materials through small purchases from year to year. The science teachers of these secondary schools can also give valuable assistance to the principals and teachers of the elementary schools, answering questions related to the kinds of materials for particular experiments, the uses of various instruments, and giving suggestions as to kind and size of science equipment to be ordered from supply houses. Again the secondary school people will prove helpful when such materials have to be ordered. They can include in their orders the smaller orders from the elementary schools which might not be accepted by the larger scientific companies.

Some supply houses offer "Science Kits" for elementary school use. These kits include many pieces of apparatus usable in different areas of science together with handbooks or direction sheets. Assembled equipment of this kind will be of great value to the teacher who, handicapped by her lack of training or experience in science, doesn't know where to begin.

Some city schools find it difficult to get certain kinds of live material for their science work. Frogs, tadpoles or frog eggs, turtles, small plants for woodland gardens are not easy to find in the city. However, the rural or suburban school can have a good supply of these things. An exchange should be set up between the two types of schools. The suburban schools can collect and send the needed materials to the city schools together with

Sea Life Collection *Courtesy Public Schools, Los Angeles, California*

related pertinent information. The city schools can send in return materials from museums, observatories, airports and such places.

The care and storage of science materials in a building is of vital importance. The materials must be so placed and stored that they will be functional. A central storage place accessible to all teachers is best as this makes it possible to serve all of the classrooms at different times. If the materials are scattered through various rooms, teachers do not know what is available. Then, too, this surplus material in a classroom is apt to clutter up the science work in progress. A centrally located cupboard or locker will provide storage space from which children and teachers can check equipment as it is needed and return it for the use of others.

Some definite plan or system for the arrangement and care of materials in the storage space must be adopted at the start and conscientiously carried out. The materials can be placed in individual boxes with prominent labels. Large boxes may be used to store all of the materials related to a particular unit and so labeled. Thermometers, anemometer, wind vane, rain gauge, weather maps, cloud charts would be in the box marked "WEATHER," while "MAGNETS" would contain magnets of different

shapes, lodestone, iron filings, and steel knitting and sewing needles. Any system is helpful so long as it is known and followed by all who are using the materials. A very simple system of checking materials in and out is important.

If space is available, it is ideal to set aside a room which can be developed as a science workshop. Here the equipment and materials can be kept. Here, too, the more complicated experiments needing more space than the average classroom offers can be performed and shared with other classes. The set-up of such a room should be simple and flexible. Elaborate or expensive furniture and equipment are not needed.

Lack of materials is no excuse for omitting science in the elementary school. Pupils, teachers, and principals really thinking and planning together can easily get materials suited to the needs and abilities of the children. They can locate a storage space and plan for the arrangement and care of the equipment. If the children are allowed to participate in such planning and collecting, there is little fear that such materials will only "collect dust on the shelves."

SELECTED BIBLIOGRAPHY

Compiled by Beatrice Davis Hurley, *Assistant Professor of Education, New York University, New York, New York*

General References

Abbot, C. G., *The Earth and Stars*. New York: Van Nostrand, 1946.

Allen, J. S., *Astronomy; What Everyone Should Know*. New York: Bobbs Merrill, 1945.

Bennett, H. H., *Elements of Soil Conservation*. New York: McGraw-Hill Book Co., 1947.

Bernal, J. D., *The Social Function of Science*. New York: The Macmillan Co., 1939.

Bradley, J. H., *Autobiography of the Earth*. New York: Coward McCann, 1935.

Brands, G., *Meteorology*. New York: McGraw-Hill Book Co., 1944.

Campbell, J. W., *The Atomic Story*. New York: Henry Holt and Co., 1947.

Craig, G. S., *Science for the Elementary School Teacher*. New York: Ginn and Co., 1946.

Crouse, W. H., *Understanding Science*. New York: Whittlesey House, 1948.

Croxton, W. C., *Science in the Elementary School, Including an Activity Program*. New York: McGraw-Hill Book Co., 1937.

Eberle, I., *Modern Medical Discoveries*. New York: Thomas Y. Crowell Co., 1948.
Eidnoff, M. L., *Atomics for the Millions*. New York: Whittlesey House, 1947.
Fenton, C. L., *Our Living World*. New York: Doubleday, Doran and Co., 1943.
Fenton, C. L., *The Rock Book*. New York: Doubleday, Doran and Co., 1940.
Gabrielson, I. N., *Wildlife Conservation*. New York: The Macmillan Co., 1941.
Haynes, W., *This Chemical Age*. New York: Alfred A. Knopf, 1942.
Hegner, R. W., *The Parade of the Animal Kingdom*. New York: The Macmillan Co., 1940.
Heiss, E. D., Obourn, E. S., and Hoffman, C. W., *Modern Methods and Materials for Teaching Science*. New York: The Macmillan Co., 1940.
Howells, W. W., *Mankind So Far*. New York: Doubleday, Doran and Co., 1944.
Hussey, R. C., *Historical Geology*. New York: McGraw-Hill Book Co., 1944.
Knight, C. R., *Life Through the Ages*. New York: Alfred A. Knopf, 1946.
Landis, W. S., *Your Servant the Molecule*. New York: The Macmillan Co., 1944.
Linton, R. and Linton, A., *Man's Way from Cave to Skyscraper*. New York: Harper and Bros., 1947.
Loomis, F. B., *Field Book of Common Rocks and Minerals*. New York: Putnam, 1923.
Lunt, J. R., *Electricity for Everyone*. New York: The Macmillan Co., 1943.
Meyer, J., *Picture Book of Molecules and Atoms*. New York: Lothrop, Lee and Shepard Co., 1947.
National Science Teachers Association Yearbook, *Time for Science*. Washington, D. C.: National Education Association, 1946.
National Society for the Study of Education. Forty-sixth Yearbook, Part I, *Science Education in American Schools*. Chicago: University of Chicago Press, 1947.
Novikoff, A., *Climbing Our Family Tree*. New York: International Publishing Co., 1945.
Osborn, F., *Our Plundered Planet*. New York: Little, Brown and Co., 1948.
Phelps, E. B., *Stream Sanitation*. New York: John Wiley and Sons, 1944.
Pickering, J. S., *The Stars Are Yours*. New York: The Macmillan Co., 1948.
Pickwell, G. B., *Weather*. New York: McGraw-Hill Book Co., 1938.
Shepard, W., *Food or Famine: The Challenge of Erosion*. New York: The Macmillan Co., 1945.
Stewart, G. R., *Fire*. New York: Random House, 1948.
University of Chicago Laboratory School, *Science Instruction in Elementary and High School*. Chicago Laboratory School, University of Chicago, 1939.
Vogt, W., *Road to Survival*. New York: William Sloan Associates, Inc., 1948.
Weaver, E. C., *Chemistry for Our Times*. New York: McGraw-Hill Book Co., 1947.
Whipple, F. L., *Earth, Moon, Planets*. Philadelphia: Blakiston, 1941.
Williams, H. L., *Stories in Rocks*. New York: Henry Holt and Co., 1948.

Science Experiment Books

Arey, C. K., *Science Experiences for Elementary Schools*. New York: Bureau of Publications, Teachers College, Columbia University, 1942.
Beeler, N. F. and Branley, F., *Science Experiments*. New York: Crowell Publishing Co., 1947.

Freeman, M. and Freeman, I., *Invitation to Experiment*. New York: E. P. Dutton Co., 1940.
Freeman M. and Freeman, I., *Fun with Chemistry*. New York: Random House, 1944.
Freeman, M. and Freeman, I., *Fun with Science*. New York: Random House, 1943.
Garrison, C. G., *Science Experiences for Little Children*. New York: Charles Scribner's Sons, 1939.
Keelor, K., *Working with Electricity*. New York: The Macmillan Co., 1935.
Lord, E. H., *Experimenting at Home with the Wonders of Science*. New York: D. Appleton-Century Co., 1940.
Lynde, C. J., *Science Experiences with Home Equipment*. Scranton, Pa.: International Testbook Co., 1937.
Lynde, C. J., *Science Experiences with Inexpensive Equipment*. Scranton, Pa.: International Textbook Co., 1939.
Lynde, C. J., *Science Experiences with Ten-Cent Store Equipment*. Scranton, Pa: International Textbook Co., 1941.
McKay, H., *Easy Experiments in Elementary Science*. New York: Oxford University Press, 1932.
Morgan, A. P., *Things a Boy Can Do with Chemistry*. New York: D. Appleton-Century Co., 1940.
Schneider, H. and Schneider, N., *Let's Look Inside Your House*. New York: William R. Scott, 1948.
Schneider, H. and Schneider, N., *Now Try This*. New York: William R. Scott, 1948.
Schneider, H. and Schneider, N., *How Big is Big?* New York: William R. Scott, 1946.
Schneider, N. and Schneider, H., *Let's Find Out*. New York: William R. Scott, 1946.

State Courses of Study in Elementary Science

The following state bulletins and courses of study in science are not included with the general elementary curriculum. They are published under separate cover.

California: State Department of Education. *Science in the Elementary School*. Sacramento, 1945.
Florida: State Department of Education. *A Guide to Teaching Science in the Elementary School*. Tallahassee, 1947.
Kansas: State Superintendent of Public Instruction. *Teachers' Guide to the Kansas Elementary School Program of Studies: Science*. Topeka, 1940.
Louisiana: State Department of Education. *Revised Course of Study in Science for the Elementary Schools*. Bulletin No. 465. Baton Rouge, 1941.
Massachusetts: State Department of Education. *A Curriculum Guide for Primary Grade Teachers*. Boston, 1947.
Nebraska: Department of Public Instruction. *Suggested Activities for the Science Program in the Nebraska Elementary Schools*. Lincoln, 1948.
New York: University of the State of New York. *Elementary School Science— A Syllabus for Elementary Schools*. Albany, 1942.

North Carólina: State Superintendent of Public Instruction. *Science for the Elementary School.* Publication No. 227. Raleigh, 1941.

Ohio: State Department of Education. *Science Education for the Elementary Schools of Ohio.* Curriculum Bulletin No. 3. Columbus, 1946.

Oregon: State Superintendent of Public Instruction. *Tentative Guide to Science for Oregon Schools*—Part I, Elementary and Junior High School Grades. Salem, 1941.

South Carolina: State Department of Education. *Suggestions for the Teaching of Science in the Twelve-Year School Program.* Columbia, 1946.

Tennessee: State Department of Education. *A Science Program for Elementary Schools, Grades One, Two and Three* and *A Science Program for Elementary Schools, Grades Four, Five and Six.* Nashville, 1944.

Utah: State Department of Education. *Science Supplement to a Teaching Guide for the Elementary Schools of Utah.* Salt Lake City, 1946.

Pamphlets and Research Studies

Bulletin of The Association for Childhood Education International, *This is Science.* Washington, D. C.: The Association, 1945.

Blough, G. O., *Elementary Science Series.* Washington, D. C.: Superintendent of Documents, U. S. Government Printing Office, 1947. (U. S. Office of Education.)

Blough, G. O. and Blackwood, P. E., *Teaching Elementary Science.* Washington, D. C.: Superintendent of Documents, U. S. Government Printing Office, 1948.

Blough, G. O. and Blackwood, P. E., *Science Teaching in Rural and Small Town Schools.* Washington, D. C.: Superintendent of Documents, U. S. Government Printing Office, Bulletin 1949, No. 5. (U. S. Office of Education.)

Craig, G. S., Science in Childhood Education. New York: Bureau of Publications, Teachers College, Columbia University, 1944.

Hill, K. H., *Children's Contributions in Science Discussions.* New York: Bureau of Publications, Teachers College, Columbia University, 1947.

Pitluga, G. E., *Science Excursions into the Community.* New York: Teachers College, Columbia University, 1943.

Preston, R. C., *Science, An Approach in the Elementary School.* Philadelphia: Public Schools, 1945.

During the past year and a half, the Department of Elementary School Principals has issued a number of bulletins featuring special areas of elementary education. If you can use some additional copies, consult the back cover of this issue for topics and prices.

Atlantic City Convention

February 25—March 2, 1950

"Education, Dynamic of Democracy" is the theme of the annual convention of the American Association of School Administrators in Atlantic City this year. The Department of Elementary School Principals has been invited to participate in joint meetings with the AASA on Wednesday and Thursday, March 1 and 2. On the two preceding days the Department will have special meetings for its own members, including an Anniversary Banquet.

Consult the following program of events that are of particular interest to elementary school principals during the AASA convention.

PROGRAM

Department of Elementary School Principals

Presiding: Miss Florence Gabriel, President of the Department; Principal of Malvern School, Shaker Heights, Ohio

Monday
February 27
St. Denis Room
Dennis Hotel
2:30 P.M.

GENERAL SESSION

Panel: Characteristics of a Good Elementary School

Leader: Dr. J. Conrad Seegers, Dean, Teachers College, Temple University, Philadelphia, Pennsylvania

Members: Dr. W. Paul Allen, Principal, Fox Meadow School, Scarsdale, New York

Miss Helon Brixey, Chairman, D.E.S.P. Editorial Committee, 1952; Principal, Brownlow School, Knoxville, Tennessee

Mr. William Buboltz, Fifth Vice President, D.E.S.P.; Principal, Berger School, Milwaukee, Wisconsin

Dr. Stuart E. Dean, Associate Professor of Education, Teachers College of Connecticut, New Britain, Connecticut

Miss Carolyn Patterson, President, N.E.A. Department of Administrative Women; Principal, Linden School, Pittsburgh, Pennsylvania

Mrs. Blanche Schmidt, Executive Committee, D.E.S.P.; Principal, Dos Palos Elementary School, Dos Palos, California

Monday
February 27
Embassy Room
Strand Hotel
5:30 P.M.

ANNIVERSARY BANQUET

Presiding: President Florence Gabriel

The time, the place, and the people make this occasion a "natural" for the celebration of the Department's twenty-ninth year. The president of AASA, Dr. John L. Bracken, was the instigator of the movement to found a national association of elementary school principals, back in 1920. It was in Atlantic City in February 1921 that the group organized and held its first meeting. Dr. Worth McClure, now executive secretary of AASA, was the editor of the Department's first yearbook, published in 1922. These and other "firsts" are being brought together in a unique program at this Banquet.

Tuesday
February 28
Madison Hotel
7:30 A.M.

Breakfast

Presiding: President Florence Gabriel

Speaker: Dr. Clarence W. Cranford, Minister, Calvary Baptist Church, Washington, D. C.: "The Armor of Truth for an Arena of Turmoil."

[Make reservations early for the Banquet and the Breakfast. Tickets at Registration Desk.]

Tuesday
February 28
St. Denis Room
Dennis Hotel
2:30 P.M.

General Session

Presiding: President Florence Gabriel

Panel: Developing Child Responsibility in the Elementary School

Leader: Dr. W. Linwood Chase, School of Education, Boston University, Boston, Massachusetts

Members: Dr. Walter D. Cocking, Editor, *School Executive,* New York, New York
Dr. Bess Goodykoontz, Associate Commissioner, U. S. Office of Education, Washington, D. C.
Dr. Herold Hunt, Superintendent of Schools, Chicago, Illinois
Miss Mary G. Kelty, Author and Lecturer, Washington, D. C.
Dr. Virgil Rogers, Superintendent of Schools, Battle Creek, Michigan

JOINT SESSIONS WITH AASA

Discussion Groups

Wednesday
March 1
Rose Room
Traymore Hotel
2:30 P.M.

Topic: Constructive Experimentation in Elementary Schools

Chairman: Gilbert S. Willey, Superintendent of Schools, Lincoln, Nebraska

Wedgewood Room
Marlborough-Blenheim Hotel
2.30 P.M.

Topic: What About Six-Year-Olds? Neighborhood Schools?

Chairman: Wade C. Fowler, Superintendent of Schools, Wichita, Kansas

Thursday
March 2
St. Denis Room
Dennis Hotel
10:00 A.M.

Topic: How Can We Provide Elementary School Supervisors and Consultancy in Small School Systems?

Chairman: W. A. Early, County Superintendent of Schools, Arlington, Virginia

Garden Lounge
Dennis Hotel
10:00 A.M.

Topic: Pre-School and Kindergarten Education

Chairman: E. Allen Bateman, State Superintendent of Public Instruction, Salt Lake City, Utah

Elementary principals have been invited to participate as panel members on the above programs.

South Central Regional Conference

sponsored by

THE DEPARTMENT OF ELEMENTARY SCHOOL PRINCIPALS OF THE N.E.A.

FORT WORTH, TEXAS, March 23-25, 1950

We Build Through Understanding

Headquarters: Texas Hotel — Registration Fee: $2.00

Thursday, March 23, 1950

2:30 P.M.—Registration—Main Lobby, Texas Hotel

6:30 P.M.—Banquet—Texas Hotel

Presiding: Florence Gabriel, President of the Department of Elementary School Principals; Principal, Malvern School, Shaker Heights, Ohio

Speaker: John L. Bracken, Superintendent of Schools, Clayton, Missouri

Friday, March 24, 1950

FIRST GENERAL SESSION

9:00 A.M.—Crystal Ballroom, Texas Hotel

Presiding: Thomas E. Pierce, Texas State College for Women, Denton, Texas

Leader: Helen Heffernan, Assistant Chief, Division of Instruction, State Department of Education, Sacramento, California

12:00 Noon—Luncheon—Blackstone Hotel

Presiding: J. Fritz Hill, Principal, Carroll Peak School, Ft. Worth, Texas

Speaker: Henry J. Otto, University of Texas, Austin, Texas

DISCUSSION GROUPS

2:30 P.M.—Texas Hotel

GROUP I—*Building a Guidance Program in the Elementary School*—Centennial Room

Chairman: Florence Reynolds, Principal, Florence School, Omaha, Nebraska

GROUP II—*Building a Curriculum in the Elementary School*—Bluebonnet Court

Chairman: Loretta Doerr, Principal, McDonogh School, New Orleans, Louisiana

GROUP III—Student Councils in the Elementary School—Cactus Room

Chairman: J. H. Hodges, Principal, Kendall School, Tulsa, Oklahoma

GROUP IV—*The Development of Social Attitudes in the Elementary School*—Ballroom

Chairman: Myrtle Evans, Principal, Abbott School, Kansas City, Kansas

Saturday, March 25, 1950

SECOND GENERAL SESSION

9:30 A.M.—Crystal Ballroom, Texas Hotel

Presiding: President Florence Gabriel

Leader: George H. Deer, Louisiana State University, Barton Rouge, Louisiana